Remarks:

This response is intended to be a complete response to the office action of September 20, 2005 and the case is believed to be in condition for allowance. Accordingly, reconsideration is respectfully requested.

Claims 2-9, 12-17, 20-26, and 28-36 were rejected in the office action. Applicants amend Claims 8, 9, 12, 13, 14, 16, 21, 26, 28, and 29 herein; Claim 15 is cancelled, and new Claims 37 through 53 are added herein. Claims 2-9, 12-14, 16-17, 20-26, and 28-53 are pending in the application.

35 USC 103

Claims 21, 22, 24, 25, 28, 29, 31, and 32 were rejected under 35 USC 103(a) as unpatentable over Matsumoto (U.S. Patent Number 6,522,731, hereinafter Matsumoto), Claim 26 was rejected under 35 USC 103(a) as unpatentable over Bae et al. (U.S. Patent No. 5,832,387, hereinafter Bae), Claim 23 was rejected under 35 USC 103(a) as unpatentable over Matsumoto in view of Rasmussen (U.S. Patent No. 4,490,788, hereinafter Rasmussen), Claims 8, 12, 13, 20, and 30 were rejected under 35 USC 103(a) as unpatentable over Gardner et al. (U.S. Patent Number 5,365,229, hereinafter Gardner) in view of Isaksson et al. (U.S. Patent Number 6,493,395, hereinafter Isaksson), Claims 14, 15, and 33-35 were rejected under 35 USC 103(a) over Gardner in view of Matsumoto, Claim 36 was rejected under 35 USC 103(a) as unpatentable over Bae in

view of Van Kerchove (U.S. Patent No. 5,812,599, hereinafter Van Kerchove), Claims 2-7 and 9 were rejected under 35 USC 103(a) as unpatentable over Gardner in view of Isaksson in further view of Baird (U.S. Patent Number 6,469,636, hereinafter Baird), and Claims 16 and 17 were rejected under 35 USC 103(a) as unpatentable over Gardner in view of Matsumoto and further in view of Tzannes (U.S. Patent Number 6,798,735, hereinafter Tzannes). Applicants respectfully traverse these rejections.

Applicants have previously argued the patentability of the claims in the Response filed on December 12, 2005 and that argument is presented here by incorporation by reference. It should be noted, however, that Applicants have persistently held the view that the combination of references from the telephony data multi-carrier communications art with well-logging wireline data communications art does not meet the requirements of a *prima facie* case of obviousness, at least, because such combinations fail to pass the filters such as change of principle of operation and unsuitability for intended purpose. Hitherto, the Examiner has not addressed those arguments.

Furthermore, Applicants have amended the claims herein to more clearly recite the subject matter of the invention. Applicants reserve the right to re-present and argue the claims as they stood earlier in the prosecution, for example, as the claims stood prior to this communication, and the amendments made herein must not be taken as a concession on the part of the Applicants as to the Examiner's position set forth in the office action. That said, as amended each of the independent claims (except for Claim 13, which is

argued separately herein below) have incorporated new limitations that are directed to the adjustments that are made during the course of a logging job to account for changes in environmental factors that affect data communication in a multi-carrier communications system deployed for well-logging wireline operations. For example, Claim 8 now recites "during the course of a logging job repeatedly measure the received signal amplitude and, in response to the measure of the received signal amplitude, to transmit the adjustment signal to the downhole telemetry cartridge" and Claim 9 now recites "and having logic to perform a training sequence including transmitting a known signal on the plurality of carriers, to receive a control signal, and in response to the control signal, to adjust at least one characteristic selected from the set having the members total power, power-per-carrier and bits-per-carrier ... wherein the performance of the training sequence is performed repeatedly during the course of a logging job." The other independent claims have analogous limitations. As noted in previous arguments made in this application, the well-logging telemetry prior art fails to teach or suggest multi-carrier communication. The telephony multi-carrier communications prior art does not deal with changes in environment that are encountered during the course of a well-logging operation. Therefore, it is not surprising that the combination of the well-logging telemetry prior art and the telephony multi-carrier communications prior art would, in addition to failing to provide the motivation to modify or combine as argued previously, would fail to include, at least these elements directed to dynamic adjustments made during the course of a logging job. Accordingly, Claims 8, 9, 12, 14, 21, 26, 28, and 29, as well as all their respective dependent claims, at least, by virtue of incorporating the limitations of their

respective base claims, are not obvious over the cited prior art, for the reasons set forth in the arguments presented on December 12, 2005, and for this additional reason. Accordingly, applicants respectfully request allowance of these claims.

New claims 37-53 have been added to recite several circumstance that may trigger the execution of a training sequence during the course of a logging-job. For example, Claim 37, which depends form Claim 21, recites that "the re-transmission of the known signal on a subset of the plurality of carriers is performed periodically" and Claim 9, that "the training sequence is performed periodically". Claim 38 recites that "the re-transmission of the known signal on a subset of the plurality of carriers is performed in response to an observed condition" and Claim 39, that "the observed condition is selected from the set including the elements deterioration of overall signal-to-noise ratio and deterioration of effective data rate" (analogous limitations may be found in the other newly added claims). The prior art does not teach or suggest executing a training sequence during the course of a logging-job. It therfore logically follows that the prior art also fails to teach or suggest the limitations recited in Claims 37-53. These claims are therefore patentable, for the reasons given in support of their respective base claims, and by virtue of such further combinations provided by these claims.

Claim 13 stands rejected under 35 USC 103(a) over the combination of Gardner and Isaksson. Applicants traverse the rejection for the reasons set forth in the Response of Dec 12, 2005, that argument incorporated herein by reference. Furthermore, Claim 13 recites, for example, "A telemetry system for transmitting well-logging data from at least

one downhole tool to a surface data acquisition system ... comprising: a. a downhole telemetry cartridge ... having a logic operable to cause transmission of the bitstream as analog signals on a plurality of carrier frequencies; and a cable driver connected having transmission power level control circuitry having logic to control the total transmission power applied to the wireline cable; b. an uphole telemetry unit ... a receiver connected to the surface data acquisition ... wherein the receiver further comprises logic operable to cause the transmission from the receiver to cable driver of a control signal indicative to the transmission power level control circuitry to increase or decrease the total transmission power applied to the wireline cable."

Thus, according to Claim 13, adjustment of the total uplink transmitter power level is under the control of the uphole receiver. In contrast, ADSL uses the locally-received upstream (equivalent to downlink) signal power level to adjust the downstream (equivalent to uplink) transmitter. In the context of well-logging telemetry, the ADSL technique for adjusting total transmission power is inferior. The uplink transmitter and downlink receiver are disposed in a wellbore which is a harsh environment due to vibration, shock and high temperature. Because of the environment, there are limits on the accuracy of the measurements and the amount of processing available in the down-hole equipment. Therefore it is preferable to perform the analysis used for adjusting the uplink power-level at the uplink receiver, i.e., at the uphole telemetry unit, which does not have these limitations, and transmit a simple result (the total transmission power control signal) to the downhole telemetry cartridge.

The Examiner asserted that "since Isaksson et al. discloses controlling transmission power level of each carrier at the transmitter by measuring a signal-to-noise ratio at the receiver (column 7, lines 5-20) that logic used to increase or decrease the total transmission power in the transmitter could have also been implemented in the receiver of the well-logging system. The implemented logic would produce a more reliable transmission signal from the receiver." Office Action of 9/20/2005, Page 12. There is no indication in Isaksson that one end of the communication dictates to the other end how to adjust total transmission power. Accordingly, Isaksson fails to teach or suggest, at least, "wherein the receiver further comprises logic operable to cause the transmission from the receiver to cable driver of a control signal indicative to the transmission power level control circuitry to increase or decrease the total transmission power applied to the wireline cable." Therefore, Claim 13 is not obvious over the combination of Gardner and Isaksson for the reasons set forth on December 12, 2005 and by virtue of such further reasons set forth herein.

It is submitted that all the claims now in the application are allowable. Applicants respectfully request reconsideration of the application and claims and its early allowance. The Commissioner is hereby authorized to charge any fees associated with this response that may be required, or credit any overpayment, to Deposit Account 03-0330.

Submission under 37 CFR 1.114
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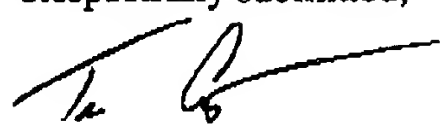
09/471,659
Clark, Jr. et al.
59.0021

Respectfully submitted,



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